

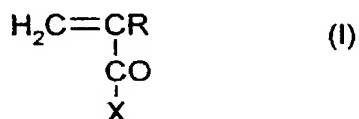
CLAIMS

1. Heat-induced gelling foaming composition comprising an aqueous phase, said aqueous phase
5 comprising a polymer comprising water-soluble units and units having in water a lower critical solution temperature LCST, the heat-induced demixing temperature in aqueous solution of said units with an LCST being
10 water of 1% by mass, and the concentration of said polymer in said composition being such that its gel point is in the range from 5 to 40°C.
2. Composition according to Claim 1, in which the heat-induced demixing temperature in aqueous solution
15 of the units with an LCST of the polymer is from 10 to 35°C for a concentration by mass in water of 1% of the said units.
3. Composition according to Claim 2, in which the concentration of the polymer in the composition is such
20 that its gel point is in the range from 10 to 35°C.
4. Composition according to Claim 1, in which the polymer is in the form of a block polymer comprising blocks consisting of water-soluble units alternating with blocks consisting of units with an LCST, or in the
25 form of a grafted polymer whose backbone is formed by water-soluble units, said backbone bearing grafts consisting of units with an LCST, said polymers possibly being partially crosslinked.
5. Composition according to any one of the preceding claims, in which the water-soluble units are
30 totally or partially capable of being obtained by polymerization, or by polycondensation, or alternatively consist totally or partially of natural polymers or modified natural polymers.
- 35 6. Foaming composition according to Claim 5, in which the water-soluble units are totally or partially capable of being obtained by polymerization, especially

free-radical polymerization, of at least one monomer chosen from the following monomers:

- (meth)acrylic acid;
- vinyl monomers of formula (I) below:

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in which:

- R is chosen from H, -CH₃, -C₂H₅ or -C₃H₇, and
- X is chosen from:
 - 10 - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon-based radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a
 - 15 sulphonic (-SO₃⁻), sulphate (-SO₄⁻), phosphate (-PO₄H₂); hydroxyl (-OH); primary amine (-NH₂); secondary amine (-NHR₁), tertiary amine (-NR₁R₂) or quaternary amine (-N⁺R₁R₂R₃) group with R₁, R₂ and R₃ being, independently of each other, a linear or branched, saturated or
 - 20 unsaturated hydrocarbon-based radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R₁ + R₂ + R₃ does not exceed 7; and
 - -NH₂, -NHR₄ and -NR₄R₅ groups in which R₄ and R₅ are, independently of each other, linear or
 - 25 branched, saturated or unsaturated hydrocarbon-based radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms of R₄ + R₅ does not exceed 7, the said R₄ and R₅ optionally being substituted with a halogen atom (iodine, bromine,
 - 30 chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO₃⁻); sulphate (-SO₄⁻); phosphate (-PO₄H₂); primary amine (-NH₂); secondary amine (-NHR₁), tertiary amine (-NR₁R₂) and/or quaternary amine (-N⁺R₁R₂R₃) group with R₁, R₂ and R₃ being, independently of each other, a
 - 35 linear or branched, saturated or unsaturated

hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of $R_4 + R_5 + R_1 + R_2 + R_3$ does not exceed 7;

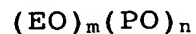
- maleic anhydride;
- 5 - itaconic acid;
- vinyl alcohol of formula $CH_2=CHOH$;
- vinyl acetate of formula $CH_2=CH-OCOCH_3$;
- N-vinyl lactams such as N-vinylpyrrolidone, N-vinylcaprolactam and N-butyrolactam;
- 10 - vinyl ethers of formula $CH_2=CHOR_6$ in which R_6 is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms;
- water-soluble styrene derivatives, especially
- 15 styrene sulphonate;
- dimethyldiallylammonium chloride; and
- vinylacetamide.
- 7. Foaming composition according to Claim 5, in which the water-soluble units of the polymer consist
- 20 totally or partially of polycondensates or of natural polymers or modified natural polymers chosen from one or more of the following components:
- water-soluble polyurethanes;
- xanthan gum;
- 25 - alginates and derivatives thereof such as propylene glycol alginate;
- cellulose derivatives and especially carboxymethylcellulose, hydroxypropylcellulose, hydroxyethylcellulose and quaternized hydroxyethyl-
- 30 cellulose;
- galactomannans and derivatives thereof, such as Konjac gum, guar gum, hydroxypropylguar, hydroxypropylguar modified with sodium methylcarboxylate groups, and hydroxypropyltrimethyl-
- 35 ammonium guar chloride; and
- polyethyleneimine.

8. Foaming composition according to any one of Claims 5 to 7, in which the water-soluble units of the polymer have a molar mass ranging from 1000 g/mol to 5 000 000 g/mol when they constitute the water-soluble backbone of a grafted polymer, or a molar mass ranging from 500 g/mol to 100 000 g/mol when they constitute a block of a multiblock polymer.

9. Foaming composition according to any one of Claims 1 to 8, in which the units with an LCST of the polymer consist of one or more polymers chosen from the following polymers:

- polyethers such as polyethylene oxide (PEO), polypropylene oxide (PPO) or random copolymers of ethylene oxide (EO) and of propylene oxide (PO) ;
- polyvinyl methyl ethers ;
- polymeric and copolymeric N-substituted acrylamide derivatives with an LCST; and
- polyvinylcaprolactam and vinylcaprolactam copolymers.

10. Foaming composition according to any one of Claims 1 to 9, in which the units with an LCST of the polymer consist of polypropylene oxide (PPO)_n with n being an integer from 10 to 50, or of random copolymers of ethylene oxide (EO) and of propylene oxide (PO), represented by the formula:



in which m is an integer ranging from 1 to 40 and preferably from 2 to 20, and n is an integer ranging from 10 to 60 and preferably from 20 to 50.

11. Foaming composition according to Claim 10, in which the molar mass of the units with an LCST of the polymer is from 500 to 5300 g/mol and preferably from 1 500 to 4000 g/mol.

12. Foaming composition according to any one of Claims 1 to 9, in which the units with an LCST of the

- polymer consist of a polymer chosen from poly-N-isopropylacrylamide, poly-N-ethylacrylamide and copolymers of N-isopropylacrylamide or of N-ethylacrylamide and of a vinyl monomer chosen from monomers having the formula (I) given in Claim 6, maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol/vinyl acetate, vinyl ethers and vinyl acetate derivatives.
- 10 13. Foaming composition according to Claim 12, in which the molar mass of the units with an LCST of the polymer is from 1000 g/mol to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.
- 15 14. Foaming composition according to any one of Claims 1 to 9, in which the units with an LCST of the polymer consist of a polyvinylcaprolactam or a copolymer of vinylcaprolactam and of a vinyl monomer chosen from the monomers corresponding to formula (I) given in Claim 6, maleic anhydride, itaconic acid, 20 vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.
- 25 15. Foaming composition according to Claim 14, in which the molar mass of the units with an LCST is from 1000 to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.
- 30 16. Foaming composition according to any one of Claims 1 to 15, in which the proportion by mass of units with an LCST of the polymer is from 5 to 70%, preferably from 20 to 65% and better still from 30 to 60% relative to the polymer.
- 35 17. Foaming composition according to any one of Claims 1 to 16, in which the concentration by mass of polymer in the aqueous phase is from 0.1 to 20%.

18. Foaming composition according to any one of Claims 1 to 17, in which the aqueous phase also optionally comprises a foaming surfactant.

19. Foaming composition according to Claim 18, in
5 which said foaming surfactant is nonionic.

20. Composition according to any one of Claims 1 to 19, in which the aqueous phase consists of a physiologically acceptable medium allowing a topical application and especially a cosmetic application.

10 21. Composition according to the preceding claim, characterized in that it constitutes a shower gel, a facial cleansing product, a make-up-removing product, a shampoo or a shaving foam or gel.

22. Foam which may be obtained from the foaming
15 composition according to any one of Claims 1 to 21, formed from a dispersion of gas bubbles in the continuous aqueous phase.

23. Use of the polymer as described in Claim 1 to stabilize a foam at a temperature above its gel point.

20 24. Cosmetic use of a composition according to any one of Claims 1 to 21, for cleansing and/or removing make-up from the skin, the scalp, the nails, the eyelashes, the eyebrows, the eyes, mucous membranes, semi-mucous membranes and/or the hair.

25 25. Cosmetic process for cleansing and/or removing make-up from keratin materials (skin, scalp, nails, eyelashes, eyebrows, eyes, mucous membranes, semi-mucous membranes and/or hair), characterized in that the composition according to any one of Claims 1 to 21
30 is applied to the keratin materials, in the presence of water, and the foam formed and the soiling residues are removed by rinsing with water.